

Table 5-8a. Assumed Distribution of Landscaped Acreage among ET_o Factors for the Eastside San Joaquin River Region (%)

ET _o FACTOR	1995 ACRES (%)	BASE ACRES (%)	2020 NO ACTION		2020 CALFED	
			EXISTING ACRES (%)	NEW ACRES (%)	EXISTING ACRES (%)	NEW ACRES (%)
1.2	85	85	50	30	20	5
1.0	10	10	25	30	40	5
0.8	5	5	25	40	40	80
0.6						10
0.4						

Table 5-8b. Potential Conservation of Existing Losses (Including Irrecoverable Loss) for the Eastside San Joaquin River Region (TAF/Year)

USE	PROJECTED REDUCTION UNDER NO ACTION ALTERNATIVE	INCREMENTAL REDUCTION UNDER CALFED	TOTAL ESTIMATED REDUCTION
Residential indoor ¹	15-20	15-20	30-40
Urban landscaping ¹	65-70	60-65	125-135
Commercial, industrial, institutional ¹	5-10	15-20	20-30
Distribution system ¹	<u>5-10</u>	<u>5-10</u>	<u>10-20</u>
Total	90-110	95-115	185-225

¹ For this region, it is assumed that 95% of all losses are recovered and available to the local water supply.

Table 5-8c. Potential Conservation of Irrecoverable Losses (Available for Reallocation) for the Eastside San Joaquin River Region (TAF/Year)

USE	PROJECTED REDUCTION UNDER NO ACTION ALTERNATIVE	INCREMENTAL REDUCTION UNDER CALFED	TOTAL ESTIMATED REDUCTION
Residential indoor ¹	0-1	0-1	0-2
Urban landscaping ^{1,2}	3-4	6-8	9-12
Commercial, industrial, institutional ¹	0-1	0-1	0-2
Distribution system ¹	<u>0-1</u>	<u>0-1</u>	<u>0-2</u>
Total	3-7	6-11	9-18

¹ For this region, it is assumed that only 5% of all loss reduction is available for reallocation.

² Urban landscaping values include both reduction in losses and changes to landscaping types. See Attachment B for more details on landscape conservation estimates.

5.6.3 UR3 - TULARE LAKE

The Tulare Lake Region includes the southern San Joaquin Valley from the southern limit of the San Joaquin River watershed to the base of the Tehachapi Mountains. The area is predominantly agricultural, but many small agricultural communities as well as the rapidly growing cities of Fresno and Bakersfield are located here. The Kings, Kaweah, Tule, and Kern Rivers flow into this region from the east. All of the rivers terminate in the valley floor and do not drain to the ocean except in extremely wet years. Urban water use comprises only about 3% of the region's total water use. The more populated urban areas are located on the valley floor, where summer temperatures over 100 degrees are not uncommon.

The region is characterized by mainly single-family dwellings with large rural landscapes. The region has a substantial amount of dairy operations and processing and packing industries for agricultural products, but very little or no industrial manufacturing activities, beyond the extraction of oil from subterranean reserves. This activity primarily occurs south and west of Bakersfield and does not constitute a large municipal water demand. The region has an average population density of just over 100 people per square mile. Most of these people are concentrated in the urban towns and cities.

Like other Central Valley regions, municipal and residential water reuse is common. Landscape water runoff often percolates to the groundwater since the region is a closed basin. However, after being treated in wastewater treatment plants, the majority of the treated water is evaporated in large evaporation ponds. Some of this water also percolates downward and provides recharge to local groundwater sources. In many parts, shallow groundwater has become salty and, in some cases, contaminated with selenium. A significant amount of surface runoff from landscape irrigation percolates to shallow groundwater and may become unusable. After treatment, municipal water is reused for agricultural irrigation or used to recharge groundwater.

Urban populations are expected to grow significantly in the next 20 years, primarily around the cities of Bakersfield and Fresno. Bakersfield is experiencing rapid growth due in part to influences from nearby metropolitan southern California.

In this region, six urban agencies have signed the Urban MOU.

URBAN INFORMATION

Tulare Lake Region

	<i>Population</i>	<i>Baseline per-capita water use</i>
1995:	1.7 million	311 gpcd
2020:	3.3 million	274 gpcd (304 if no conservation occurs)
Approximate CII use in 1995:		24% of per-capita use
Estimated CII use in 2020:		25% of per-capita use
Assumed CII reduction as a result of conservation measures:		
No Action Alternative:		4% (of 2020 projected per-capita water use)
CALFED:		7%
Assumed residential indoor use (average):		
2020 baseline		65 gpcd
2020 No Action Alternative		60 gpcd
2020 CALFED		55 gpcd
Assumed distribution system losses (as a percent of total urban use):		
Existing:		7%
No Action Alternative:		6%
CALFED:		5%
Assumed ratio of irrecoverable losses to total existing loss:		0.3 (30%)
Assumed existing urban landscape acreage:		70,000 acres
Assumed urban landscaped acreage in 2020:		130,000 acres
Assumed ET _o Value:		4.3 feet of water annually

Estimated Reduction in Irrecoverable Losses for Reallocation to Other Water Supply Uses

As discussed above, the Tulare Lake Region is characterized as having incidental reuse, especially of indoor residential water. Some indoor use percolates to groundwater after treatment and is relied on as a groundwater source, especially for agricultural users adjacent to wastewater treatment plant disposal areas. However, a significant amount of water evaporates after being treated at regional wastewater treatment plants. Reductions in the amount of evaporation loss can constitute a reduction in irrecoverable loss available for reallocation.

Although the region does have potential water savings that can be reallocated to other beneficial uses, the reduction in other losses provide other benefits, namely improved water quality, changed timing of flow releases, reduced fishery impacts, reduced treatment costs, and potentially reduced need for additional water supply development. These benefits primarily relate to the savings in Table 5-9b.

Table 5-9a. Assumed Distribution of Landscaped Acreage among ET_o Factors for the Tulare Lake Region (%)

ET _o FACTOR	1995 ACRES (%)	BASE ACRES (%)	2020 NO ACTION		2020 CALFED	
			EXISTING ACRES (%)	NEW ACRES (%)	EXISTING ACRES (%)	NEW ACRES (%)
1.2	15	15	10	10	5	0
1.0	60	60	60	30	50	10
0.8	25	25	30	60	45	70
0.6						20
0.4						

Table 5-9b. Potential Conservation of Existing Losses (Including Irrecoverable Loss) for the Tulare Lake Region (TAF/Year)

USE	PROJECTED REDUCTION UNDER NO ACTION ALTERNATIVE	INCREMENTAL REDUCTION UNDER CALFED	TOTAL ESTIMATED REDUCTION
Residential indoor ¹	15-20	15-20	30-40
Urban landscaping ¹	20-25	40-45	60-70
Commercial, industrial, institutional ¹	10-15	15-20	25-35
Distribution system ¹	<u>10-15</u>	<u>10-15</u>	<u>20-30</u>
Total	55-75	80-100	135-175

¹ For this region, it is assumed that 70% of all losses are recovered and available to the local water supply.

Table 5-9c. Potential Conservation of Irrecoverable Losses(Available for Reallocation) for the Tulare Lake Region (TAF/Year)

USE	PROJECTED REDUCTION UNDER NO ACTION ALTERNATIVE	INCREMENTAL REDUCTION UNDER CALFED	TOTAL ESTIMATED REDUCTION
Residential indoor ¹	5-10	5-10	10-20
Urban landscaping ^{1,2}	7-10	18-20	25-30
Commercial, industrial, institutional. ¹	1-5	5-10	6-15
Distribution system ¹	<u>2-5</u>	<u>2-5</u>	<u>4-10</u>
Total	15-30	30-45	45-75

¹ For this region, it is assumed that only 30% of all loss reduction is available for reallocation.

² Urban landscaping values include both reduction in losses and changes to landscaping types. See Attachment B for more details on landscape conservation estimates.

5.6.4 UR4 - SAN FRANCISCO BAY

The San Francisco Bay Region is primarily urban, with very little agricultural acreage. The region represents merely 3% of the state's land. The region generally is cool and often foggy along the coast, with Mediterranean-like weather in its inland valleys. The coastal range creates numerous micro-climates and allows cool air to flow at times from the Pacific Ocean into the interior of the state. Coastal areas are often about 10 degrees cooler than the interior part of the region, and sometimes as much as 20-30 degrees cooler in summer than the regions of the Central Valley. In contrast to the Sacramento and Tulare Lake Regions, the San Francisco Bay Region's urban demand accounts for 20% of the total demand. (Environmental use is a little less than of 80% of the total.)

The region is characterized by single- and multi-family dwellings with smaller landscapes; large amounts of industry, including computer and electronics manufacturing; and many commercial businesses. The commercial and industrial water demands can be significant, accounting for almost one-third of the total urban demand. The region is heavily populated, with an average density of over 1,300 people per square mile.

Unlike the Central Valley regions, downstream reuse of landscape runoff and treated wastewater is very minimal. The majority of unconsumed urban water ends up in the San Francisco Bay or is directly discharged to the Pacific Ocean. There is little opportunity for incidental reuse. For this reason, there is an increasing interest in capturing the discharges and recycling them back into the region. However, conservation measures also can help reduce the irrecoverable losses to these salt sinks. Almost all decreases in urban water use in this region, whether previously consumed or not, can provide a water supply benefit.

Urban populations are expected to expand only slightly, primarily because of limited land and other resources. However, even what is considered limited growth for this region can be significant when compared to the total projected populations in the Central Valley regions (see Figure 5-4).

In this region, 27 urban water agencies have signed the Urban MOU.

URBAN INFORMATION San Francisco Bay Region

	<i>Population</i>	<i>Baseline per-capita water use</i>
1995:	5.8 million	177 gpcd
2020:	6.9 million	169 gpcd (199 if no conservation occurs)
Approximate CII use in 1995:		38% of per-capita use
Estimated CII use in 2020:		38% of per-capita use
Assumed CII reduction as a result of conservation measures:		
	No Action Alternative:	4% (of 2020 projected per-capita water use)
	CALFED:	7%
Assumed residential indoor use (average):		
	2020 baseline	65 gpcd
	2020 No Action Alternative	60 gpcd
	2020 CALFED	55 gpcd
Assumed distribution system losses (as a percent of total urban use):		
	Existing:	6%
	No Action Alternative:	6%
	CALFED:	5%
Assumed ratio of irrecoverable losses to total existing loss:		
		0.9 (90%)
Assumed existing urban landscape acreage:		
		155,000 acres
Assumed urban landscaped acreage in 2020:		
		180,000 acres
Assumed ET _o Value:		
		3.3 feet of water annually

Estimated Reduction in Irrecoverable Losses for Reallocation to Other Water Supply Uses

Most of the conservation potential in the San Francisco Bay Region would constitute a water savings that could be made available to other beneficial uses, including offsetting future urban demands. Such savings also would provide other benefits, namely improved water quality, changed timing of flow releases, reduced fishery impacts, reduced treatment costs, and potentially reduced need for additional water supply development.

Table 5-10a. Assumed Distribution of Landscaped Acreage among ET₀ Factors for the San Francisco Bay Region (%)

ET ₀ FACTOR	1995 ACRES (%)	BASE ACRES (%)	2020 NO ACTION		2020 CALFED	
			EXISTING ACRES (%)	NEW ACRES (%)	EXISTING ACRES (%)	NEW ACRES (%)
1.2	15	15	10	10	0	0
1.0	60	60	50	30	35	20
0.8	25	25	40	60	55	55
0.6					10	20
0.4						5

Table 5-10b. Potential Conservation of Existing Losses (Including Irrecoverable Loss) for the San Francisco Bay Region (TAF/Year)

USE	PROJECTED REDUCTION UNDER NO ACTION ALTERNATIVE	INCREMENTAL REDUCTION UNDER CALFED	TOTAL ESTIMATED REDUCTION
Residential indoor ¹	35-40	35-40	70-80
Urban landscaping ¹	25-30	55-60	80-90
Commercial, industrial, institutional ¹	15-20	30-35	45-55
Distribution system ¹	—	10-15	10-15
Total	75-90	130-150	205-240

¹ For this region, it is assumed that only 10% of all losses are recovered and available to the local water supply.

Table 5-10c. Potential Conservation of Irrecoverable Losses (Available for Reallocation) for the San Francisco Bay Region

USE	PROJECTED REDUCTION UNDER NO ACTION ALTERNATIVE	INCREMENTAL REDUCTION UNDER CALFED	TOTAL ESTIMATED REDUCTION
Residential indoor ¹	30-35	30-35	60-70
Urban landscaping ^{1,2}	20-25	50-55	70-80
Commercial, industrial, institutional. ¹	15-20	30-35	45-55
Distribution system ¹	—	10-15	10-15
Total	65-80	120-140	185-220

¹ For this region, it is assumed that 90% of all loss reduction is available for reallocation.

² Urban landscaping values include both reduction in losses and changes to landscaping types. See Attachment B for more details on landscape conservation estimates.

5.6.5 UR5 - CENTRAL COAST

The Central Coast Region encompasses land on the western side of the coastal mountains that is hydraulically connected to the Bay-Delta region. This region includes southern portions of the Santa Clara Valley and San Benito County, as well as the urban communities from San Luis Obispo south to Santa Barbara. These areas are included because of the recent completion of the Coastal Aqueduct, envisioned to provide SWP water to urban users along its route. Exported water from the San Felipe unit of the CVP is delivered to urban users in San Benito and Santa Clara Counties. In contrast to the Sacramento and Tulare Lake Regions, the Central Coast Region's urban demand accounts for 20% of the total demand. (Agriculture uses just less than 80% of the total.)

The region has a diverse climate with summer months cool along the coastal areas and warm inland. During winter, however, interior parts of the region become cooler than coastal areas. The region is characterized by largely single-family dwellings with relatively small landscapes, and limited commercial and industrial operations. The region has an average population density of just under 120 people per square mile. Most of these people are concentrated in the urban towns and cities.

Unlike the Central Valley regions, downstream reuse of landscape runoff and treated wastewater is minimal. The majority of unconsumed urban water is directly discharged to the Pacific Ocean. There is little opportunity for incidental reuse. For this reason, there is an increasing interest in capturing the discharges and recycling them back into the region. However, conservation measures also can help reduce the irrecoverable losses to these salt sinks. Almost all decreases in urban water use in this region, whether previously consumed or not, can provide a water supply benefit.

In this region, 13 urban agencies have signed the Urban MOU.

URBAN INFORMATION Central Coast Region

	<i>Population</i>	<i>Baseline Per-capita water use</i>
1995:	1.3 million	180 gpcd
2020:	1.9 million	164 gpcd (192 if no conservation occurs)
Approximate CII use in 1995:		32% of per-capita use
Estimated CII use in 2020:		33% of per-capita use
Assumed CII reduction as a result of conservation measures:		
No Action Alternative:		4% (of 2020 projected per-capita water use)
CALFED:		7%
Assumed residential indoor use (average):		
2020 baseline		65 gpcd
2020 No Action Alternative		60 gpcd
2020 CALFED		55 gpcd
Assumed distribution system losses (as a percent of total urban use):		
Existing:		8%
No Action Alternative:		7%
CALFED:		5%
Assumed ratio of irrecoverable losses to total existing loss:		1.0 (100%)
Assumed existing urban landscape acreage:		35,000 acres
Assumed urban landscaped acreage in 2020:		50,000 acres
Assumed ET _o Value:		2.8 feet of water annually

Estimated Reduction in Irrecoverable Losses for Reallocation to Other Water Supply Uses

All of the conservation potential in the Central Coast Region would constitute a water savings that could be made available to other beneficial uses, including offsetting future urban demands. Such savings also would provide other benefits, namely improved water quality, changed timing of flow releases, reduced fishery impacts, reduced treatment costs, and potentially reduced need for additional water supply development.

Table 5-11a. Assumed Distribution of Landscaped Acreage among ET_o Factors for the Central Coast Region (%)

ET _o FACTOR	2020 NO ACTION				2020 CALFED	
	1995 ACRES (%)	BASE ACRES (%)	EXISTING ACRES (%)	NEW ACRES (%)	EXISTING ACRES (%)	NEW ACRES (%)
1.2	5	5	3	0	0	0
1.0	20	20	15	10	5	0
0.8	55	55	40	30	25	15
0.6	20	20	42	55	60	65
0.4				5	10	20

Table 5-11b. Potential Conservation of Existing Losses (Including Irrecoverable Loss) for the Central Coast Region (TAF/Year)

USE	PROJECTED REDUCTION UNDER NO ACTION ALTERNATIVE	INCREMENTAL REDUCTION UNDER CALFED	TOTAL ESTIMATED REDUCTION
Residential indoor ¹	10-15	10-15	20-30
Urban landscaping ¹	10-15	10-15	20-30
Commercial, industrial, institutional ¹	0-5	5-10	5-15
Distribution system ¹	<u>0-5</u>	<u>5-10</u>	<u>5-15</u>
Total	20-40	30-50	50-90

¹ For this region it is assumed that none of the losses are recovered and available to the local water supply.

Table 5-11c. Potential Conservation of Irrecoverable Losses (Available for Reallocation) for the Central Coast Region (TAF/Year)

USE	PROJECTED REDUCTION UNDER NO ACTION ALTERNATIVE	INCREMENTAL REDUCTION UNDER CALFED	TOTAL ESTIMATED REDUCTION
Residential indoor ¹	10-15	10-15	20-30
Urban landscaping ^{1,2}	10-15	10-15	20-30
Commercial, industrial, institutional. ¹	0-5	5-10	5-15
Distribution system ¹	<u>0-5</u>	<u>5-10</u>	<u>5-15</u>
Total	20-40	30-50	50-90

¹ For this region, it is assumed that all loss reduction is available for reallocation.

² Urban landscaping values include both reduction in losses and changes to landscaping types. See Attachment B for more details on landscape conservation estimates.